

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1-52. (CANCELED)

53. (CURRENTLY AMENDED) An isolated or purified nucleic acid, wherein the nucleic acid comprises:

(A) retroviral nucleic acid sequences consisting of:

- (1) ψ packaging sequences;
- (2) cis-acting nucleic acid sequences for reverse transcription;
- (3) cis-acting nucleic acid sequences for virus integration;
- (4) at least one cPPT sequence, ~~[[and]]~~ at least one CTS sequence,

~~and the intervening *pol* sequences wherein any other sequence of *pol*, other than the 178 bp fragment comprising the cPPT and CTS sequence, is absent; and~~

- (5) optionally a cis-acting sequence RRE;

and

(B) at least one heterologous nucleic acid sequence of interest,

wherein the retroviral nucleic acid sequences in (A) induce ~~[[induces]]~~ import of the heterologous nucleic acid sequence of interest into a cell nucleus.

54. (PREVIOUSLY PRESENTED) A vector comprising the nucleic acid as claimed in claim 53.

55. (PREVIOUSLY PRESENTED) The vector of claim 54, which is an expression vector, a shuttle vector, an integration vector, a transposon, or a retrotransposon.

56. (CURRENTLY AMENDED) ~~The vector of claim 54, which is~~ A vector pTRIP ΔU3 EF1αGFP deposited at National Collection of Cultures of Microorganismes, Accession Number I-2328.

57. (PREVIOUSLY PRESENTED) A recombinant cell comprising the vector of claim 56.

58. (PREVIOUSLY PRESENTED) A recombinant cell comprising the vector of claim 54.

59. (CURRENTLY AMENDED) A recombinant virus comprising the nucleic acid of claim 53.

60. (CURRENTLY AMENDED) The recombinant virus of claim 59, which is a retrovirus.

61. (CURRENTLY AMENDED) The recombinant retrovirus of claim 60, which is a lentivirus.

62. (PREVIOUSLY PRESENTED) A recombinant cell comprising the nucleic acid as claimed in claim 53.

63. (PREVIOUSLY PRESENTED) The recombinant cell of claim 62, wherein the cell is a HeLa cell or a hematopoietic stem cell.

64. (PREVIOUSLY PRESENTED) The recombinant cell of claim 62, wherein the cell is a hematopoietic stem cell.

65. (CURRENTLY AMENDED) A process for inserting a heterologous nucleic acid sequence of interest into a nucleus of a target cell, *in vitro*, wherein the process comprises exposing an isolated or purified nucleic acid to a target cell under conditions

that permit uptake of the isolated or purified nucleic acid into the target cell, wherein the isolated or purified nucleic acid comprises:

(A) retroviral nucleic acid sequences consisting of:

- (1) ψ packaging sequences;
 - (2) cis-acting nucleic acid sequences for reverse transcription;
 - (3) cis-acting nucleic acid sequences for virus integration;
 - (4) optionally a cis-acting sequence RRE; and
 - (5) at least one cPPT sequence, ~~[[and]] at least one CTS sequence, and the intervening pol sequences wherein any other sequence of pol, other than the 178 bp fragment comprising the cPPT and CTS sequence, is absent;~~
- and,

(B) at least one heterologous nucleic acid sequence of interest, wherein the retroviral nucleic acid sequences in (A) induce ~~[[induces]]~~ import of the heterologous nucleic acid sequence of interest into the cell nucleus.

66. (PREVIOUSLY PRESENTED) The process as claimed in claim 65, wherein the efficiency of insertion of the nucleic acid of interest into the target cell nucleus is 30% or greater.

67. (PREVIOUSLY PRESENTED) The process as claimed in claim 65, wherein the nucleic acid of interest is in a vector.

68. (PREVIOUSLY PRESENTED) The process as claimed in claim 65, wherein the heterologous nucleic acid encodes a peptide, polypeptide, or protein.

69. (PREVIOUSLY PRESENTED) The process as claimed in claim 65, wherein the target cell is a non-dividing cell.

70. (PREVIOUSLY PRESENTED) The process as claimed in claim 65, wherein the target cell is a HeLa cell or a hematopoietic cell.

71. (CURRENTLY AMENDED) A process for expressing a heterologous nucleic acid sequence of interest, *in vitro*, wherein the process comprises:

(A) exposing a target cell to an isolated or purified nucleic acid under conditions that permit uptake of the isolated or purified nucleic acid into the target cell to create a recombinant cell, wherein the isolated or purified nucleic acid comprises:

- (1) retroviral nucleic acid sequences consisting of:
 - (a) ψ packaging sequences;
 - (b) cis-acting nucleic acid sequences for reverse transcription;
 - (c) cis-acting nucleic acid sequences for virus integration;
 - (d) optionally a cis-acting sequence RRE; and
 - (e) at least one cPPT sequence, ~~[[and]] at least one CTS sequence, and the intervening *pol* sequences wherein any other sequence of *pol*, other than the 178 bp fragment comprising the cPPT and CTS sequence, is absent;~~

and

(2) at least one heterologous nucleic acid sequence of interest, wherein the nucleic acid sequences in (A) induce ~~[[induces]]~~ import of the heterologous nucleic sequence of interest into a cell nucleus, and

(B) culturing the recombinant cell under conditions that permit at least part of the nucleic acid to be transferred to the nucleus of the recombinant cell and the heterologous nucleic acid of interest to be expressed.

72. (PREVIOUSLY PRESENTED) The process as claimed in claim 71, wherein the nucleic acid is in a vector.

73. (PREVIOUSLY PRESENTED) The process as claimed in claim 71, wherein the gene of interest is expressed in tissue culture.

74. (PREVIOUSLY PRESENTED) The process as claimed in claim 71, which further comprises purifying or isolating the product of expression of the gene of interest.

75. (CURRENTLY AMENDED) A nucleic acid comprising the *ClaI* insert [[and]] or the *EcoRI/BamHI* insert, or both the *ClaI* and *EcoRI/BamHI* inserts of vector pTRIPΔU3EF1αGFP deposited at National Collection of Cultures of Microorganismes, Accession Number I-2328.

76. (CURRENTLY AMENDED) An isolated or purified nucleic acid comprising:

(A) retroviral nucleic acid sequences comprising:

1. ψ packaging sequences;
2. cis-acting nucleic acid sequences for reverse transcription;
3. cis-acting nucleic acid sequences for virus integration;
4. optionally a cis-acting sequence RRE; and
5. at least one cPPT sequence, [[and]] at least one CTS sequence,
and the intervening *pol* sequences ~~wherein any other sequence of~~

~~pol~~, other than the 178 bp fragment comprising the cPPT and CTS sequence, is absent;

and

(B) at least one heterologous nucleic acid sequence, wherein the retroviral nucleic acid ~~sequence induces~~ sequences in (A) induce import of the heterologous nucleic sequence into a cell nucleus.

77. (PREVIOUSLY PRESENTED) A vector comprising the nucleic acid as claimed in claim 76.

78. (CURRENTLY AMENDED) A process for inserting a heterologous nucleic acid sequence of interest into the nucleus of a target cell, *in vitro*, said method comprising exposing an isolated or purified nucleic acid to a target cell under conditions that permit uptake of said nucleic acid into the target cell, wherein said isolated or purified nucleic acid comprises:

(A) retroviral nucleic acid sequences comprising:

- (1) ψ packaging sequences;
- (2) cis-acting nucleic acid sequences for reverse transcription;
- (3) cis-acting nucleic acid sequences for virus integration;
- (4) at least one cPPT sequence, ~~[[and]]~~ at least one CTS sequence, and the intervening pol sequences ~~wherein any other sequence of pol, other than the 178 bp fragment comprising the cPPT and CTS sequence, is absent;~~ and
- (5) optionally a cis-acting sequence RRE;

and

(B) at least one heterologous nucleic acid sequence;

wherein the retroviral nucleic acid sequences in (A) induce ~~sequence induces~~ import of the heterologous nucleic sequence into a cell nucleus.

79. (CURRENTLY AMENDED) A process for expressing a heterologous nucleic acid sequence of interest *in vitro* comprising:

(A) exposing target cells to an isolated or purified nucleic acid under conditions that permit uptake of said nucleic acid into the target cell to create a recombinant cell, wherein said isolated or purified nucleic acid comprises:

(1) retroviral nucleic acid sequences comprising:

- (a) ψ packaging sequences;
- (b) cis-acting nucleic acid sequences for reverse transcription;
- (c) cis-acting nucleic acid sequences for virus integration;
- (d) at least one cPPT sequence, ~~[[and]]~~ at least one CTS sequence, and the intervening *pol* sequences ~~wherein any other sequence of *pol*, other than the 178 bp fragment comprising the cPPT and CTS sequence, is absent;~~ and
- (e) optionally a cis-acting sequence RRE;

and

(2) at least one heterologous nucleic acid sequence of interest, wherein the retroviral nucleic acid sequences in (A) induce ~~sequence induces~~ import of the heterologous nucleic acid sequence into a cell nucleus; and

(B) culturing the recombinant cell under conditions that permit at least part of the nucleic acid to be transferred to the nucleus of the recombinant cell and the heterologous nucleic acid of interest to be expressed.